GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	, PG_00070055		
Field of study	Techniki produkcyjne laboratorium		
Date of commencement of studies	February 2025	Academic year of realisation of subject	2025/2026
Education level	second-cycle studies	Subject group	
Mode of study	Full-time studies	Mode of delivery	at the university
Year of study	1	Language of instruction	Polish -
Semester of study	2	ECTS credits	6.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Division of Applied Mechanics and Biomechanics -> Institute of Mechanics and Machine Design -> Faculty of Mechanical Engineering and Ship Technology -> Faculties of Gdańsk University of Technology		
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Marek Chodnicki	
	Teachers		

Lesson types

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	0.0	0.0	0.0	30.0	0.0	30

E-learning hours included: 0.0

Learning activity and number of study hours

Learning activity	Participation in didactic classes included in study plan	Participation in consultation hours	Self-study	SUM
Number of study hours	30	0.0	120.0	150

Subject objectives

Goal of the subject is to develop practical skills in selecting and applying chosen manufacturing processes (including machining, forming, additive manufacturing and/or CNC techniques) and assessing their impact on product quality. The student learns how to prepare the workstation, conduct laboratory experiments, measure and analyse basic process parameters, and interpret the results in the context of technology selection and workplace safety.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K7_U03] plans and carries out experimental investigations to determine the parameters of devices, processes or systems in the field of Mechanical Engineering and Mechanical Engineering, appropriately selects methods, techniques and tools, interprets results and estimates measurement errors	The student will be able to plan and carry out simple experimental research on manufacturing processes and workstations, select appropriate methods, techniques, and measuring tools, and then correctly interpret the results obtained and estimate basic measurement errors.	[SU1] Ocena realizacji zadania
[K7_W03] demonstrates a well-structured and theoretically grounded knowledge of the key issues in Mechanical Engineering to enable the design and diagnosis of mechanical systems, processes and devices	The student will have structured and theoretically grounded knowledge of key manufacturing techniques, enabling the design, analysis, and diagnostics of basic processes and production stations in the field of mechanics and machine construction.	[SW1] Ocena wiedzy faktograficznej
[K7_K81] is able to cooperate in international team at her/his own university, during work placement and during study abroad	students will acquire skills enabling effective teamwork, including in an international environment, during joint laboratory tasks at the university and during internships and studies abroad.	[SK1] Ocena umiejętności pracy w grupie [SK4] Ocena umiejętności komunikacji, w tym poprawności językowej
[K7_K101] acknowledges the importance of knowledge related to the field of study in solving cognitive and practical problems, critically assessing the information obtained	students will acquire the skills necessary to critically evaluate technical information obtained concerning manufacturing processes and to consciously apply their knowledge of mechanics and machine design when solving practical experimental problems.	[SK2] Ocena postępów pracy

Subject contents

Course content – project
Familiarization with the organization and health and safety rules in the manufacturing technology laboratory.

Preparation of the workstation and performance of exercises in the field of machining (lathe, milling machine, drill).

Measurements of roughness, dimensional accuracy, and assessment of surface quality after various machining processes.

Exercises in the basics of CNC machining / programming simple operations and analysis of machining results.

Presentation of selected additive techniques (e.g., FDM/FFF) and comparison with classic manufacturing methods.

Preparation of laboratory test reports, interpretation of results, and discussion of measurement errors.

Prerequisites and co-requisites

Prerequisites: knowledge of the basics of technical mechanics, materials science, manufacturing techniques, workshop metrology, and laboratory health and safety rules.
Additional requirements: ability to operate basic machines and measuring tools, and willingness to work in a team in a laboratory environment.

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
task completion	60.0%	100.0%

Recommended reading

Basic literature

Chwarścianek, Feliks, i Bydgoska Szkoła Wyższa. *Procesy i techniki produkcyjne: skrypt dla studentów kierunków inżynierskich / Feliks Chwarścianek.* Bydgoszcz: Bydgoska Szkoła Wyższa, 2011. Print.

Rysiński, Jacek i in. *Technologie, procesy i systemy produkcyjne / [redakcja: dr inż. Jacek Rysiński, dr inż. Dariusz Więcek]; Akademia Techniczno-Humanistyczna w Bielsku-Białej. [Wydział Budowy Maszyn i Informatyki].* Bielsko-Biała: Wydawnictwo Naukowe Akademii Techniczno-Humanistycznej w Bielsku-Białej, 2022. Web.

	Supplementary literature	- **Kalpakjian, S., Schmid, S. R.** *Manufacturing Processes for Engineering Materials*, 6th ed. Pearson, 2017, ISBN 978-0134290553 **Păduraru, I., Păduraru Graur, I., Bălănică Dragomir, C. M.** *Recent Advances and Future Prospects in Advanced Manufacturing Processes: Review* **Acta Technica Napocensis Series: Applied Mathematics, Mechanics, and Engineering**, 2023, Vol. 66, No. 5.
	eResources addresses	
Example issues/ example questions/ tasks being completed	Selection of the appropriate manufacturing technique for a given part (turning, milling, grinding, 3D printing, etc.) with justification for the choice. Calculation of cutting parameters (vc, f, ap) for the selected machining process and assessment of their impact on surface quality. Measurement of roughness and dimensional deviations of the part after machining and comparison of the results with the technical documentation. Programming a simple operation on a CNC machine tool (e.g., making a groove, hole, plane) and analysis of the result. Comparison of parts made using different techniques (e.g., classic machining vs. 3D printing) in terms of accuracy and surface quality. Identifying sources of measurement errors in the laboratory and proposing ways to reduce them. Preparing a short report on the exercise: description of the process, measurement results, technological conclusions.	
Practical activites within the subject	Not applicable	

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